are experienced in starting up regenerative furnaces where the operator has been unfamiliar with producer gas.

Table 8 gives the heat capacities of the usual gases found in the products of combustion as determined by the formulas developed by Mallard and Le Chatelier. These formulas, given in Table 10, were used in computing the heat capacities of the gases at intervals of 200° C. (360° F.) between 0° C. (32° F.) and 2600° C. (4712° P.) which are given in Table 8.

At the bottom of Table 1 there have been collected and totalized the numerical values used in the second column of Table 3 designated by the symbols N2+ and N2. These gases have the same heat capacity per gram molecule as given in the second column of Table 8. This procedure simplifies the computation. The other numerical values in the second column of Table 3 were brought forward from Tables 1 and 2. These numerical values, designating the number of gram molecules in the products of combustion, were then multiplied by the heat capacity values given in Table 8 and the products for steps of 400° C. (720° F.) were tabulated in columns three to nine, inclusive, of Table 3. The points for the curves were obtained by the summation of these values for the appropriate combustion conditions. These points were then plotted and connected by curved lines giving a number of diverging parabolas indicated by the solid black lines, each of which is marked by a percentage value designating the air supply conditions which influenced the formation of the products of combustion.

Table 4 shows a similar computation made to obtain the heat capacity of the gas itself and the air supplies.

The heat capacity of the gas is plotted in dash lines and that of the air supplies in dot-dash lines, these last being marked with the percentage values of the air supply.

The next step in the plotting of these curves is

the spotting of the points denoting the amount of heat released by the combustion of the gas, with 60, 80 and 100 per cent air supply. The values marked /, *F* and *A* in Table 5 give the summations of the number of calories released by the gas as given in Table 1, where they are marked with the same reference letters. From this point on, the plotting may be done graphically or by computing the points as in Table 5. When the points /, *F* and *A* have been spotted, a line parallel to the temperature scale is drawn downward crossing all